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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/803,062	STANGO ET AL.	
	Examiner	Art Unit	
	PHYOWAI LIN	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-31 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) 25-31 is/are allowed.

6)☒ Claim(s) 1,2,5,6,10-14,20 and 23 is/are rejected.

7)☒ Claim(s) 3,4,7-9,15-19, 21-22 and 24 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 17 March 2004 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 03/17/2004.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement1.

1. The references listed in the Information Disclosure Statement filed on 03/17/2004 have been considered by the examiner (see attached PTO-1449 form or PTO/SB/08A and 08B forms).

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, **the receiver amplifier further comprising at least one pump laser and an optical tap upstream of the receiver amplifier (see claim 1, line 6 and line 14); circuitry to shut down the receiver amplifier (see claim 2, line 1); downstream amplifier with gain control circuitry (see claim 3,line 2 and claim 21, line 3); local data storage (see claims 6 and 18 of line 1); a feed forward control circuit (see claims 7 and 19 of line 1);a spectral filtering factor of the optical add/drop multiplexing module (see claims 8,17 and 26 of line 2); an automatic power control circuit (see claim 22,line 2)** must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure

is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1, 5 and 11** are rejected under 35 U.S.C 103(a) as being unpatentable over Okano et al. (US Pub Number 2004/0208567) in view of Sekiya (US Pub Number 204/085621).

Regarding to claim 1, Okano et al. disclose node of an optically amplified wavelength division multiplexing network, the node connecting at least one upstream optical fiber link to at least one downstream optical fiber link (see FIG.1), comprising:

a receiver amplifier (a receiving amplifier 16-see FIG.1), the receiver amplifier receiving an optical signal comprising a plurality of optical channels from the at least

one upstream optical fiber link (see [0009] lines 1-3 and prior art FIG.1 where in plurality of optical channels (wavelength multiplexed signals) are amplified by the receiving amplifier 16 through optical fiber line), the receiver amplifier further comprising at least one pump laser;

an optical add/drop multiplexing module (a switch (SW) 170 of the cross connector device 17-see FIG.4), the optical add/drop multiplexing module adapted to at least one of drop at least one of the plurality of optical channels, pass at least one of the plurality of optical channels, and add at least one of the plurality of optical channels (see [0076] lines 1-5 where in the switch (SW) 170 of the cross connector device 17 can perform the dropping, passing and adding of the wavelength multiplexed signals based on demultiplexing sections 171 and 174);

a transmitter amplifier (a transmitting amplifier 18-see FIG.1), the transmitter amplifier amplifying the at least one of the plurality of optical channels passed and the at least one of the plurality of optical channels added (see [0010] lines 1-4; [0089] lines 5-7; FIG.1 and FIG.6 where in the transmitting amplifier 18 amplifies the optical signal which passes from the optical transmission device 1 to optical transmission device 2 and the transmitting amplifier 18 amplifies the optical signal which adds from the optical transmission device 2 to optical transmission device 3);and

Even though Okano et al. disclose the receiver amplifier, the optical add/drop multiplexing module and the transmitting amplifier; Okano et al. fail to specifically disclose the amplifier having a pump laser, an optical tap of receiving amplifier for

monitoring an optical signal power and receiver amplifier operates as noise source in response to a loss of signal from the optical fiber link being detected by the optical tap.

Sekiya disclose the optical fiber 1 as Raman amplification medium (receiver amplifier) having a pumping portion 2 for injecting pump light into the Raman amplification optical fiber 1(see [0119] lines 2-6 and FIG.1).Additionally, Sekiya disclose an optical tap monitoring an optical signal power (see [0119] lines 6-7 and FIG.1), the amplifier amplifying the optical signal during normal operation and operating as a noise source generating an output noise power in response to a loss of signal from the optical fiber link being detected by the optical tap (see [0032] lines 17-29 where in the pump power can control the Raman amplification during normal operating and operating as noise (ASE) when the loss of the transmission fiber).

Therefore, it would have been an obviousness to combine Okano et al. with Sekiya for the purpose of having the pump laser with the receiver amplifier and generating the receiver amplifier as noise source when there is loss of signal from the transmission fiber being detected by the optical tap because it would allow the optical amplified wavelength division multiplexing node achieving the control technique of the pump power of the amplification when there is a noise level is being detected.

Regarding to claim 5, Okano et al. and Sekiya disclose everything claimed as applied above (see claim 1). In addition, Sekiya discloses where in at least one pump laser is adapted to increase the output noise power (Raman ASE) of the receiver amplifier to a predetermined target level of the output noise in response to the loss of signal being detected (see [0032] lines 17-29 and FIG.1 where in the pump power

reduces the input signal light power so the degradation of signal quality due to Raman ASE is increased and it can be happened when loss of signal is being detected in the transmission fiber) .

Therefore, it would have been an obviousness to combine Okano et al. with Sekiya for the purpose of having the pump laser with the receiver amplifier and generating the receiver amplifier as noise source when there is loss of signal from the transmission fiber being detected by the optical tap because it would allow the optical amplified wavelength division multiplexing node achieving the control technique of the pump power of the amplification when there is a noise level is being detected.

Regarding to claim 11, Okano et al. and Sekiya disclose everything claimed as applied above (see claim 1). In addition, Okano et al. disclose the node comprise an optical cross-connection node (see [0076] lines 1-2 and FIG.4 where in NE 2 have optical cross-connection (cross-connector device 17) node).

5. **Claim 2** is rejected under 35 U.S.C 103(a) as being unpatentable over Okano et al. (US Pub Number 2004/0208567) in view of Sekiya (US Pub Number 204/085621) as applied to claim 1, respectively, above and further in view of Maroney (US Patent Number 6681079).

Regarding to claim 2, Okano et al. and Sekiya disclose everything claimed as applied above (see claim 1). However, they fail to specifically disclose the receiver amplifier comprises circuitry to shut down the receiver amplifier after detecting the loss of signal.

Maroney disclose the amplifier has shut down circuit 20 to shut down the amplifier after detecting the loss of signal from the fiber (see column 3, lines 38-42 and FIG.2).

Therefore, it would have been an obviousness to combine Okano et al. and Sekiya with Maroney for the purpose of having the shut down circuitry for closing the amplifier when the loss of signal is detected because it would allow the optical node having less noise level for making reliable and improving communication system.

6. **Claim 6** is rejected under 35 U.S.C 103(a) as being unpatentable over Okano et al. (US Pub Number 2004/0208567) in view of Sekiya (US Pub Number 204/085621) as applied to claim 5, respectively, above and further in view of Rapp (US Pub Number 2003/0147126).

Regarding to claim 6, Okano et al. and Sekiya disclose everything claimed as applied above (see claim 5). In addition, Sekiya disclose a predetermined target level of pump power (pumping current value), and a corresponding calculated operating parameter needed to operate the at least one pump laser (aimed values of pumping light powers) at the predetermined target level of pump power (see [0152] lines 1-5).

Rapp discloses data storage stores the predetermined target level of output noise power (ASE power) (see [0057] lines 18-24).

Therefore, it would have been an obviousness to combine Okano et al. and Sekiya with Rapp for the purpose of storing the predetermined output noise power, pump power and operating parameter of one pump laser because it would allow the

optical node achieving an optimum gain of the data signals is set up in the receiving amplifier based on above stored values.

7. **Claim 10** is rejected under 35 U.S.C 103(a) as being unpatentable over Okano et al. (US Pub Number 2004/0208567) in view of Sekiya (US Pub Number 204/085621) as applied to claim 1, respectively, above and further in view of Sparks et al. (US Pub Number 2003/0090758).

Regarding to claim 10, Okano et al. and Sekiya disclose everything claimed as applied above (see claim 1). However, they fail to specifically disclose the at least one upstream optical fiber link comprises at least two upstream optical fiber links and the at least one downstream optical fiber link comprises at least two optical fiber links.

Sparks et al. disclose where in at least one upstream optical fiber link comprises at least two upstream optical fiber links and the at least one downstream optical fiber link comprises at least two optical fiber links (see [0040] lines 1-4; [0023] lines 11-19 and prior art FIG.1).

Therefore, it would have been an obviousness to combine Okano et al. and Sekiya with Sparks et al. for the purpose of having at least two upstream optical fiber links and at least two downstream optical fiber links with optical node because it would allow the optical node achieving two fiber links as when one fiber link is broken then the system can switch to another fiber link for making reliable and backup communication system.

8. **Claim 12** is rejected under 35 U.S.C 103(a) as being unpatentable over Okano et al. (US Pub Number 2004/0208567) in view of Sekiya (US Pub Number 204/085621) as

applied to claim 1, respectively, above and further in view of Kobayashi et al. (US Pub Number 2002/0114060).

Regarding to claim 12, Okano et al. and Sekiya disclose everything claimed as applied above (see claim 1). However, they fail to specifically disclose at least one downstream optical fiber link comprises at least one in-line optical amplifier (see [0133] lines 1-4 and FIG.17 where in an optical fiber link forward to downstream site having in-line optical amplifier 104-5 between terminal station A and terminal station C).

Therefore, it would have been an obviousness to combine Okano et al. and Sekiya with Sparks et al. for the purpose of having in-line-amplifier between two optical nodes because it would allow the optical node achieving increasing of transmission optical power level which is amplified by in-line amplifier for making signal power increasing system.

9. **Claim 13** is rejected under 35 U.S.C 103(a) as being unpatentable over Okano et al. (US Pub Number 2004/0208567) in view of Sekiya (US Pub Number 204/085621) as applied to claim 1, respectively, above and further in view of Mao (US Patent Number 5926590).

Regarding to claim 13, Okano et al. and Sekiya disclose everything claimed as applied above (see claim 1). However, they fail to specifically disclose the optical add/drop multiplexing module comprises signal conditioning features.

Mao discloses an optical add/drop multiplexing module comprises signal conditioning features (see column 6, lines 33-35 and FIG.1).

Therefore, it would have been an obviousness to combine Okano et al. and Sekiya with Sparks et al. for the purpose of having signal condition features with optical add/drop multiplexing module because it would allow the optical node checking the signal condition inside the optical add/drop multiplexing module for making accurate communication system.

10. **Claims 14 and 23** are rejected under 35 U.S.C 103(a) as being unpatentable over Okano et al. (US Pub Number 2004/0208567) in view of Sekiya (US Pub Number 204/085621) and Inagaki et al. (US Patent Number 7061666).

Regarding to claim 14, Okano et al. disclose a method for controlling transients in a downstream optical fiber link caused by a loss of signal in an upstream optical fiber link of an optically amplified wavelength division multiplexing network (see FIG.1), the method comprising the steps of:

provisioning an optical add/drop multiplexing node (a switch (SW) 170 of the cross connector device 17 inside the NE 2-see FIG.4), the optical add/drop multiplexing node comprising a receiver amplifier (a receiving amplifier 16-see FIG.1 and FIG.4), an optical add/drop multiplexing module (the switch (SW) 170 of the cross connector device 17), and a transmitter amplifier (a transmitting amplifier 18-see FIG.1 and FIG.4), the receiver amplifier comprising at least one pump laser operating at a pump power, provisioning comprising at least one of dropping at least one channel from an optical signal, passing through at least one channel, and adding at least one channel to the optical signal (see [0076] lines 1-5 where in the switch (SW) 170 of the cross connector

device 17 can perform the dropping, passing and adding of the wavelength multiplexed signals based on demultiplexing sections 171 and 174);

Even though Okano et al. disclose the receiver amplifier, the optical add/drop multiplexing module and the transmitting amplifier; Okano et al. fail to specifically disclose the amplifier having a pump laser, an optical tap of receiving amplifier for monitoring an optical signal power and receiver amplifier operates as noise source in response to a loss of signal from the optical fiber link being detected by the optical tap and calculating a received signal power at input of the transmitter amplifier.

Sekiya disclose detecting the loss of signal upstream of the receiver amplifier; and operating the receiver amplifier as a noise source generating an output noise power in response to the loss of signal, the receiver amplifier generating an input noise power at the transmitter amplifier (see [0119] lines 2-6; [0119] lines 6-7; [0032] lines 17-29 and FIG.1 where in Sekiya disclose the optical fiber 1 as Raman amplification medium (receiver amplifier) having a pumping portion 2 for injecting pump light into the Raman amplification optical fiber 1(see [0119] lines 2-6 and FIG.1).Additionally, Sekiya disclose an optical tap monitoring an optical signal power (see [0119] lines 6-7 and FIG.1), and operating as a noise source generating an output noise power in response to a loss of signal from the optical fiber link being detected by the optical tap (see [0032] lines 17-29 where in the pump power can control the Raman amplification during normal operating and operating as noise (ASE) when the loss of the transmission fiber). .

Inagaki et al. disclose calculating a received signal power at an input of the transmitting amplifier (second-stage optical amplifier 8(26)-see FIG.8 and FIG.9) from

the at least one channel passed before a loss of signal (see column 13, lines 5-9 and FIG.9 where in the gain of the second-stage optical amplifier 26 can be calculated by a gain calculated circuit 74 according to the output signals from photodiodes 72 and 50).

Therefore, it would have been an obviousness to combine Okano et al. with Sekiya and Inagaki et al. for the purpose of having the pump laser with the receiver amplifier and generating the receiver amplifier as noise source when there is loss of signal from the transmission fiber being detected by the optical tap and calculating the receiving signal power at transmitter amplifier because it would allow the optical amplified wavelength division multiplexing node achieving the control technique of the pump power of the amplification when there is a noise level is being detected.

Regarding to claim 23, Okano et al., Sekiya and Inagaki et al. disclose everything claimed as applied above (see claim 14). In addition, Sekiya disclose where in the detection the loss of signal comprises tapping and monitoring the optical signal from the upstream optical fiber link (see [0019] lines 1-7; [0032] lines 26-29 and FIG.1 where in the loss of the fiber can be detected by optical tap 7).

Therefore, it would have been an obviousness to combine Okano et al. with Sekiya and Inagaki et al. for the purpose of having the optical tap for detecting the loss of signal in the fiber because it would allow the method of the controlling transients in optical fiber knowing how much amplifier power level have to apply to the input signal based on detected loss of signal for making improving communication method.

11. **Claim 20** is rejected under 35 U.S.C 103(a) as being unpatentable over Okano et al. (US Pub Number 2004/0208567) in view of Sekiya (US Pub Number 204/085621)

and Inagaki et al. (US Patent Number 7061666) as applied to claim 14, respectively, above and further in view of Maroney (US Patent Number 6681079).

Regarding to claim 20, Okano et al., Sekiya and Inagaki et al. disclose everything claimed as applied above (see claim 14). However, they fail to specifically disclose the receiver amplifier comprises circuitry to shut down the receiver amplifier after detecting the loss of signal.

Maroney disclose the amplifier has shut down circuit 20 to shut down the amplifier after detecting the loss of signal from the fiber (see column 3, lines 38-42 and FIG.2).

Therefore, it would have been an obviousness to combine Okano et al., Sekiya and Inagaki et al. with Maroney for the purpose of having the shut down circuitry for closing the amplifier when the loss of signal is detected because it would allow the optical node having less noise level for making reliable and improving communication system.

Allowable Subject Matter

12. **Claims 3, 4, 7-9, 15-19, 21-22 and 24** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. **Claims 25-31** are allowed.

14. The following is an examiner's statement of reasons for allowance:

Claim 25 is allowed because the closest prior arts, Okano et al. (US Pub Number 2004/0208567) by itself or combination with Sekiya (US Pub Number 2004/0085621)

fail to anticipate or teach a method for controlling transients in a downstream optical fiber link caused by a loss of signal in an upstream optical fiber link, the method having adjusting the optical add/drop multiplexing module to pass a substantial amount of an output noise power from the receiver amplifier after loss of signal without impacting transmission of at least one of the passed channel and the added channel during normal operation before the loss of signal; calculating a received signal power at an input of the transmitter amplifier from the at least one passed channel before the loss of signal; calculation a target level of output noise power from the receiver amplifier, an output noise power substantially equal to the target level of output noise power resulting in an input noise power at the input of the transmitter amplifier after loss of signal substantially equal to the received signal power before the loss of signal; calculation a target level of pump power needed to pump the receiver amplifier to generate an output noise power substantially equal to the target level of output noise power; calculating a corresponding operating parameter needed to operate the at least one pump laser at the target level of pump power; detecting the loss of signal upstream of the receiver amplifier;

Okano et al. simply teach a receiver amplifier, an optical add/drop multiplexing module and transmitter amplifier and Sekiya simply teaches the amplifier can be pumped by the pump source and the amplifier outputs the noise power output when detecting loss of signal in transmission fiber.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHYOWAI LIN whose telephone number is (571) 270-1659. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PWL

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M. R. Sedighian 12/03/07

M. R. SEDIGHIAN
PRIMARY EXAMINER